Thesis-1985-R691e

Rodgers, Althea B., 1952-

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THE EFFECTS OF RATE OF PRESENTATION ON RADIO COMMERCIAL RECALL

By

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1973

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
July, 1985

THE EFFECTS OF RATE OF PRESENTATION

ON RADIO COMMERCIAL RECALL

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PREFACE

This study is concerned with how listener response is affected by three radio commercials when speech compression is used. Respondents were 43 broadcasting, 128 speech communications, and 42 marketing students enrolled at Oklahoma State University during the fall semester of 1985.

The writer expresses gratitude and sincere appreciation to Dr. Gregory Stefaniak, dissertation committee chairman, who gave much assistance, valuable suggestions and encouragement; Dr. Philip E. Paulin and Dr. Bill Rugg, who offered wise counsel and gave of their time generously. Thanks are also due to Dr. Bruce Petty, Curriculum and Instruction, OSU, for his suggestions and advise. Dr. Ronald Payne, OSU Audio Visual Department, for invaluable support.

Gratitude is extended to Rick Ehmen of KVRO-FM, Stillwater, Okla., for his suggestions, time, and assistance.

Special thanks is extended to Bena Harper, speech communications; Dr. P.E. Paulin, journalism/broadcasting; and Patriya Silpatric, marketing, OSU, for supplying the population of this study.

Special recognition and deepest appreciation must be given to my family and friends, Lena, Max, Doug, Sharon, Mona, Kevin, Julie, Hubert, and the OSU Audio Visual Department, for their constant support, encouragement, help and patience throughout this study.

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CHAPTER I

INTRODUCTION

The commercial radio audience is being exhorted in some way to make a specific response (Kleppner, 1973). Before an audience can or will make a desired response it must comprehend and retain the message (Murphy, 1980). Advertisers spend heavily in order to obtain the responses they seek (MacLachlan and Siegel, 1980). If the cost effectiveness of a commercial is judged by the number of response related messages, "speech compression" might be a desirable treatment for the advertiser's message. Presentation time can be increased (or decreased) through the use of a speech compressor. Ritter, Balducci, and McCollum (1982) report:

> More information can be squeezed into the traditional 30- or 60-second time periods, e.g., a normal paced 38-second commercial can be compressed into 30-seconds without editing or deleting important copy. More commercials could be run in the same slot (in a 60-second commercial break, two 24-second ads plus a 12-second spot could be broadcast instead of two 30-second spots, p. 39).

According to LaBarbera and MacLachlan (1979), employing speech compression would save advertisers money:

> In view of the increasing cost of broadcast media, advertisers are searching for ways to increase the impact of their commercials. Moreover, they are attempting to decrease costs through reducing the length of their commercials. The 30-second commercial now accounts for the bulk of the television advertising business and there is increasing interest in 10-second commercials (p. 30).

Compressed speech is the term applied to recorded speech which is changed in such a way that the rate of presentation is greater than the

original recorded rate, without any change in the vocal pitch quality. An electronic device is used to change the rate of of the original recording.

This study will attempt to determine whether the presentation of a commercial can be compressed so that information is gained and time is saved without any loss in comprehension.

Many studies have been conducted concerning the effects of listening rate upon comprehension of connected speech. Over the past 30 to 40 years experiments have been conducted in several areas of education involving compressed speech. Compressed speech research projects have also been made by the military and industry. Emerson Foulke (1969) devoted the years 1964-1968 to testing compressed speech with blind students. Friedman and Johnson (1969) experimented with compressed rates of speech on students learning a foreign language. Other experiments into the effects on learning have been conducted with the hearing-impaired, with schizophrenic performances, in unilateral and dichotic variations, and learning through the use of headphones (Wookcock, 1971; Carroll and Cramer, 1968; Friedman and Orr, 1966; Altshuler, 1965). Research in time-compressed advertising has been conducted only during the past seven years (LaBarbera and MacLachlan, 1978; MacLachlan and LaBarbera, 1979; MacLachlan and Siegel, 1980).

This study will attempt to determine the manner in which listener response is affected by radio commercials when speech compression is employed.

The procedure for testing was based on a tested questionnaire supplied by Radio Recall Research in Holmdel, New Jersey. Testing guidelines for this study were provided by Radio Recall Research.

Formating for testing demographic questions and a call back questionnaire supplied by Triple R Research was used.

To test commercial recall, an interviewer from Triple R Research screened people at a shopping mall. The interviewer had each person enter a room where a radio was playing background music. In the "listening center" respondents filled out three questionnaires while the radio was playing pre-recorded background music which contained three commercials. No reference was made to the music or the commercials. Within 24-hours each respondent was called and asked a series of questions to determine the level of recall for each of the three commercials.

The format for this study was based upon the same procedure used by Triple R Research. Two hundred thirteen college students were tested over three days. Call back questions were made within 24-hours to determine the level of recall of three commercials, and which version (compressed or normal commercial) received the highest level of recall. In the testing center the students were asked a series of questions on product use, while background music was played. After the interview, they were given three questionnaires to fill out. The questionnaires, (supplied by Radio Recall Research, Holmdel, New Jersey) screened for demographics, and product catagory usage. No reference was made to the radio, the program material, or the commercials.

Statement of the Problem

Can the presentation of three radio commercials be compressed without decreasing listener comprehension? Will listeners be able to recall the message content of three time-compressed commercials one day after

hearing them? Will there be a significant difference in listener recall between the groups when three commercials are presented at a normal rate and the same three commercials are presented at an accelerated rate?

Purpose of the Study

The purpose of this study is to apply the current theory of compressed speech by testing its effects on radio listeners. The research will determine the manner and extent to which listener recall is affected by radio commercials that employ speech compression. Another purpose is to determine any differences in recall between one group of students hearing three commercials presented at a normal rate, and a different group of students hearing the same three commercials at a 130 percent compressed rate.

Significance of the Study

A review of studies on speech compression reveal that researchers are just beginning to question the effects of compressed radio advertisements on listeners. These studies indicate that time-compressed commercials have improved recall by 36 percent over the normal rate (MacLachlan and Siegel, 1980). Advertising Age (Feb. 18, 1980, p. 15) stated: "Of the top 20 (ad) agencies, 18 have at least tried time-compression, either for research purposes or for actual on-air commercials. . . ." Based upon research interest generated by this statement, letters were sent to the top 20 advertising agencies in the United States. The letters offered the results of this study in exchange for samples of time-compressed commercials for use in testing recall (See Appendix A). Reply was minimal. Young & Rubicam wrote:

> Some Y & R clients are aware of the technique and are following MacLachlan's progress. Assessment of efficacy (for at least one major Client) would rest on results of natural exposure research (viz. related recall, p. 2).

Ogilvy & Mather Advertising reported they had some interest in time-compression in 1980, but stated the method was never used in advertising. Doyle Dane Bernbach Inc., reported some experimentation "sometime ago," but stated, there would not be any value in pursuing the effort. "What experimentation we did was limited to several television commercials. We did not do any work with radio." D'Arcy MacManus Masius (DMM) replied that they did not have any time-compressed ads to offer. Advertising Research Foundation responded for Grey Advertising. Representing Grey, Robert Chestnut reported nothing available of a non-proprietary nature. However, Chestnut sent several copies of reports (public domain) on time-compressed speech and suggested that the researcher contact MacLachlan. Also, Sid Hecker at Young & Rubicam suggested talking with MacLachlan (See Appendix B). MacLachlan stated, in a telephone conversation on November, 29, 1984: "There is very little systematic testing of radio commercials. . . .85 percent of speech compression has been conducted on TV commercials."

Information from studies employing radio and television as test median for compressed speech, and studies from the educational field have served as guides for this study.

Hypotheses

Hypothesis 1: Three radio commercials may be presented at a normal rate and at a compressed rate of 130 percent of the original without any significant differences in loss of comprehension between the two groups.

Hypothesis 2: There will be no significant differences between

recall scores of the two groups one day after hearing the commercials.

Definition of Terms

Compression at 130 percent: A subtle increase in speed of the original taped commercials. The commercials were re-recorded 30 percent faster than normal with the Lexicon Model 1200 Time Compressor/Expander.

Compromise Experimental Group-Control Group: The research design used in this study. The groups consisted of students of similar characteristics (age and level of education).

Non-compressed or Normal rate: The recorded average rate in words-per-minute used during the original recording. Also referred to as 100 percent compression.

Recall: Recall of information presented in the commercials one day after the presentation. Recall is determined by the number of correct responses when listeners are telephoned 24-hours after hearing the commercials.

Speech Compression: A method of shortening the playback time of the original recorded message through an electronic process. This process allows the operator to increase or decrease the length of the original message without changing the vocal pitch quality. Also referred to as time-compression, compressed speech, and speeded speech.

Limitations of the Study

The population for this study was limited to 43 students enrolled in classes in the School of Journalism and Broadcasting, 128 speech communications students, and 42 marketing students at Oklahoma State University during the fall semester of 1985. From the 213 participants,

40 listening groups were established. Since the students were not randomly assigned to the listening groups, a compromise experimental group-control group design was used in this study. Each of the groups heard a ten-minute radio broadcast containing three commercials. Group I heard the commercials at the normal rate and Group II listened at the 130 percent compressed rate. One day after hearing the commercials, each person was called and asked standard recall questions as set by Radio Recall Research, Inc.

The three commercials used in the study were randomly chosen from a total of nine, supplied by the National Association of Broadcasters from its 1984 CLIO Award Winning Radio Commercials. Randomness was achieved by drawing three commercials from a box containing all nine. The first three chosen also determined the order used in programming.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Research has addressed the problem of determining the maximum rates at which certain audiences can listen to compressed speech with minimal losses in comprehension. This review will examine the research findings as they pertain to the dependent variable recall.

The purpose of this chapter is to present literature in the areas of speech compression that will be of benefit to this study.

This chapter will review:

1) Early Development of Speech Compression
2) Effects on Listening
3) Effects of Rates of Presentation
4) Effects on Comprehension
5) Effects of Gender of Listener
6) Effects of Narrator's Voice
7) Effects of Difficulty of Material
8) Effects of Training
9) Listener Reaction
10) Effects of Retention
11) Effects of Testing Methods

Early Development of Speech Compression

Pioneering research in the field of speech compression was by Fletcher at the Bell Telephone Research Laboratories in 1929. He experimented with accelerated speech by playing a phonograph record at a faster rate than the one used during the original recording. The result of speeding up the recording was a "Donald Duck" sound. Fletcher's experiments led other researchers to pursue a variety of avenues in speech compression (Foulke, 1971).

Goldstein (1940) recorded lectures onto a phonograph record at 285 w.p.m. and played them back at the rate of 325 w.p.m. He found that students had a fairly good perception and understanding at that rate, even though, as with Fletcher's experiment, the presentation raised the pitch of the voice. Early experiments were constantly plagued with distorted sound because of the shift to a higher frequency during playback.

Working to eliminate the rise in pitch from acceleration, Garvey (1950) began work on a "cut and splice" method of speech compression. By manually cutting segments out of an audio tape and splicing the remaining parts back together, he found speech could be increased two and one half times without reducing intelligibility below 90 percent. This process was perfected by Fairbanks, Everitt, and Jaeger. At the University of Illinois, Fairbanks, Everitt, and Jaeger (1954) developed a tape recorder that would compress speech, thus eliminating the time consuming process of the "cut and splice" method developed by Garvey. Fairbanks stated:

> Until comparatively recently we had not been aware that several approaches to the problem similar to ours had previously been made by other experimenters. We have now learned that our method, although developed independently, resembles in certain features the theory and details of

> earlier work by French and Zinn, Gabrilovitch, Haase, Gabor, Vilbig and perhaps others (p. 23).

Early reports by Fairbanks, Guttman, and Miron (1957) state that the subjects used in their experiments were able to comprehend material at rates ranging close to 300 words-per-minute with essentially no loss in comprehension. Two technical messages on meterology were recorded for use in their study. One message (1554 words) was about meteorological instruments. The second message (1573 words) dealt with weather forecasting in support of flying. The messages were designed for the lay person. Both passages were read by a professional male narrator speaking at a rate of approximately 140 w.p.m. The five message-test conditions consisted of 0, 30, 50, 60, and 70 percent compression, and a test only (no message) at 100 percent compression. Thirty-six male trainees from the Chanute Air Force Base (not engaged in weather training) were assigned to each condition. Forty-four men were assigned to the 100 percent test-only condition. Fairbanks, Guttman, and Miron reported 50 percent comprehension when the messaage was compressed to 40 percent of the original (353 w.p.m.). At 282 w.p.m. (50 percent compression) loss in comprehension was minimal. Maximum learning was reportedly reached when the message was presented at 200 percent of its original speed (twice the normal rate).

Effects on Listening

An early report on the benefits of "listening studies" comes from Harry Goldstein (1940) who was one of the first to experiment with the effects of presentation rate on a person's listening ability. Studies have shown that learning through listening tends to be a tedious process (Woodcock and Clark, 1968). This process, as described by Miller (1956,

p. 8), suggests that information is stored in chunks, and comprehension of that information "might not decrease until a chunk capacity per time threshold is reached." Miller states:

> The information processing ability can be increased by the employment of a system which reduces the number of bits (of information) actually needing to be retained. Ability also improves as the information processed may be related to prior learning (familiarity) and with association between sequential states (redundancy).

A receiver's ability to process information involves "the registration, encoding, and storage of speech information" and, according to Foulke and Sticht (1967), these operations require time. Frijda (1972) constructed a model of the human memory system that described the short-term memory as being of a fixed and very small capacity. Frijda reports that it takes a certain amount of time to locate a familar item in memory. In relation to Frijda's report, Foulke (1971) states:

> If items are added to short term storage at a faster rate than the rate at which they can be processed, they will begin to accumulate. This accumulation will be limited by the decay of items in store. When word rate does not exceed the processing rate, words will be processed in the order of their arrival. However, when word rate exceeds the processing rate, there will be a confusion of the order in which they are processed (p. 2).

Expanding on this thought, Beatty, Behnke, and Froelich (1980) state that receivers have finite decoding capabilities. They suggest that increasing the rate of input will result in an overload that could possibly lead to a loss in comprehension. Providing another look into a listener's ability to process information, MacLachlan and LaBarbera (1978) state that the human mind was designed to accommodate two-way communication.

> In a one-way communication the mind is involved simply in receiving a communication. If the flow of information from a one-way communication is too slow, boredom will set in and attention will shift...If the pace is too fast, subjects may

> find it difficult and uncomfortable to assimilate the information. The most pleasant kind is one that falls within these two extremes (p. 14).

In working toward a better understanding of the factors which affect listening comprehension it is desirable to know what effect rates of presentation have on listeners.

Effects of Rates of Presentation

Many tests have been conducted to determine the "normal" speech rate. Nelson (1955) states that an average "cruising speed" of thought for most college students is about four hundred words per minute while most classroom lecturers speak only 100 w.p.m. Nichols and Stevens (1957) found conversational rates to be 125 w.p.m. while Foulke and Sticht (1966) found 207 w.p.m. was the mean from 100 college students listening to moderately difficult literary material. Johnson (1972) found a mean oral reading rate of 176.5 w.p.m. Miller (1979) reported that a normal speaking rate in Oklahoma was 169 w.p.m. Cain and Lass (1974) found "a most preferred" listening rate to be 175 w.p.m., and a "least preferred" rate to be 100 and 300 w.p.m. Seo (1974) states that we have the ability to listen to rates well above those considered normal.

> Investigation indicates that human speech production organs easily can produce speech at the rate of 150 words-per-minute. This rate of production is limited by the physical structure of the speech organs because the muscles and bones of the speech organ cannot move with unlimited rapidity. On the other hand it has been found that the trained ear can comprehend compressed speech as fast as 450 words-per-minute (p. 788).

Effects on Comprehension

Experimenters have conducted listening tests using different rates of presentation to determine where comprehension begins to decline. In the

range of 125-172 w.p.m., Diehl, White, and Burk (1959) and Foulke (1968) found listening comprehension to be unaffected. From 125-225 w.p.m., Nelson (1948), and Harwood (1955) found a slight but insignificant loss in comprehension. In the range of 141, 201, and 282 w.p.m., Fairbanks, Guttman, and Miron (1957) found little difference in comprehension. From 175-300 w.p.m., Orr, Friedman, and Williams (1965) found an insignificant loss in comprehension. In testing the blind, Nolan (1962) found comprehension at 275 w.p.m. "to be almost as good as" comprehension at 175 w.p.m. Experiments reported by Fairbanks, Guttman, and Miron (1957) and Foulke (1962 and 1969) generally agree that comprehension begins to decline when material is compressed by 45 percent. Duker (1974) states:

> The conclusion to be drawn from studies by Nelson, Harwood, Diehl, Fairbanks, Guttman and Miron, Foulke, Amster, Nolan and Bixler is that comprehension is only moderately affected by increasing word rate until a word rate of approximately 275 or 280 w.p.m. is reached--and comprehension begins to decline rapidly at about this rate, regardless of the initial or uncompressed word rate (p. 501).

A 1948 study by Nelson used radio as the testing medium. Nelson realized the high percentage of listeners who obtained their news information from the radio, and began testing rate variations of "straight" newscasts. Five newscasts were presented to 250 students enrolled in a freshman communication skills class at Iowa State University. The newscasts were presented at a normal rate of 125 w.p.m., and accelerated rates of 150, 200, 225, and 250 words per minute. In the testing situations, students were divided into five groups of 50 each. Listening tests were conducted over a one-week period. From test scores, Nelson concluded that there was not a significant difference in comprehension among the various groups. The difficulty of material presented the most difference in levels of recall among the students.

The instrument used to estimate the difficulty level between newscasts was the Flesch Formula, which assigns the material to grade levels ranging from 5.9 to 11.0, or from "easy" to "difficult." It takes into account the sentence length, the number of affixes, and the number of personal references (Duker, 1974). Nelson found the highest comprehension from the recall test to be 125 w.p.m., and the lowest to be 225 w.p.m. Flesch's Formula revealed that the most difficult newscast differed from the most easily recalled newscast by a full reading grade. The most efficient rate as measured by student reaction was between 175-200 w.p.m.

In a 1966 study where listening rate preferences were questioned, Foulke and Sticht found a decrease in comprehension of 6 percent between 225 and 325 w.p.m., and a further decrease in comprehension of 14 percent between the higher rates of 325 and 425 w.p.m. The literary passage used in this test was rated at a "moderate listening level" for college students.

Orr (1968) states that intelligibility or comprehension begins to decline when speech is compressed to 275 to 300 words per minute. In agreement with Orr, Langford (1974) reports that listening performance decreases as words-per-minute exceed 275.

Employing a word rate under 275 w.p.m., Gleason, Calloway and Lakota (1974, p. 954) presented an instructional tape to college students at 225 w.p.m. Lakota found no significant differences in comprehension. He reported, "The compressed tape led to more efficient learning because it saved time."

At Oklahoma State University, Gill (1976) divided 60 engineering science students into six groups to test their comprehension of a taped

lecture. Listening rates were 174 and 223 w.p.m. Test scores indicated that the six groups did not differ significantly in listening comprehension. Gill reported that students did no better on the comprehension test when listening at 223 w.p.m., than those who listened at the normal rate of 174 w.p.m."

Other studies indicate a significant difference in listening comprehension when the normal recorded rate is increased.

Oakley (1970) presented pre vocational information to 398 high school English students at a normal rate of 166, and compressed rates of 266, 332, and 381 w.p.m. Comprehension reportely decreased sharply at the compressed rates.

Rossiter (1971) also found a significant decline in comprehension when material was presented at 233 w.p.m.

Adelson (1972) presented 200 college students an uninterrupted hour long lecture composed of three equated passages at 275 w.p.m. A 75-item multiple choice comprehension test was given after each lecture. Comprehension was shown to be greater at 175 w.p.m. than at 275 w.p.m.

From these studies we find many contrasts in the effects that rate of presentation has on comprehension. At a rate of 223 w.p.m., Gill found no significant difference, but Rossiter reported a decline in comprehension. Since the test subjects were of the same grade level, perhaps there were other variables in each testing situation that affected the participants comprehension scores. Variables such as time of day, content of the material presented, mode of compression, room size, acoustics, comfort level of the room, or the narrator's voice could influence listener comprehension.

Effects of Gender of Listener

A review of comprehension test scores of male and female listeners also reveal differing results. In rates ranging from 174 to 475 w.p.m., Foulke and Sticht (1967) and Orr and Friedman (1967) reveal no sex related differences. Earlier findings by Hallow (1955) and Brown (1965) also report no relationship between gender and comprehension scores.

Goldhaber and Weaver (1968) reported a difference in male and female comprehension, but state the difference they found might have been affected by the research topic. In their study 240 freshman and sophomore students enrolled in a speech fundamentals class were randomly selected to 10 students per 24 groups (5 males and 5 females per group). The topic was the history of radio and television. Three messages were presented to each group at differing levels of difficulty. The passages were recorded at 140 w.p.m. and compressed for presentation at 175, 325, 375, and 425 w.p.m. The first message was rated at the graduate level. The difficulty level for the second message was rated for college freshmen. The third passage was rated for eighth graders. Immediately following each presentation a multiple choice test was given. Results of the comprehension tests showed a significant decrease in comprehension between 175 and 325 w.p.m. The mean test score for male listeners was 6.775 while the mean test score for female listeners was 5.491. Overall mean scores were significantly higher at the freshman level of difficulty than at the graduate or eighth grade level.

In contrast Hogben (1967) reported that females rated significantly better than males on comprehension test scores when listening at high rates. Nine different rates were used ranging from 280 to 360 w.p.m.

In a study by McCracken (1971, p. 319) 90 males and 90 females were exposed to eight different readings. Four readings were recorded at a normal rate of 160 w.p.m., and four were recorded at an accelerated rate of 320 w.p.m. The galvanic skin response (GSR) of the subjects while listening was measured by a dermograph. No significant correlation was found between comprehension test scores and GSR data. The GSR scores correlated negatively with comprehension scores for males and positively for females. To test comprehension, a multiple choice test was given immediately following the presentations. Test results showed males and females were able to comprehend the material equally well. However, the male listeners had a higher attention level when listening to passages compressed to 50 percent. Written reactions from subjects revealed stress when listening at accelerated rates. McCracken reported that more females than males indicated a stress increase. One female commented, "Because the rate is faster, it is more difficult."

Effects of Narrator's Voice

Another factor influencing comprehension of time-compressed material is the voice of the narrator. Foulke and Sticht (1969) report:

> Oral readers differ considerably with respect to vocal timbre and, of course, there are conspicuous sex differences in vocal pitch. Oral readers also differ with respect to factors such as average word rate, and variation in word rate, pitch, and loudness, that combine to define the personal oral reading style (p. 493).

Many psychologists have questioned the effects of male and female narrations. Daniloff, Shriner, and Zemlin (1968) found vowels produced by a female to be more intelligible under all degrees of time compression than a comparable males. In another study Zemlin, Daniloff, and Shriner (1968) observed speech recorded at normal, 120, 130, 140, and 150 percent

compression, by a male and female narrator. Difficulty in comprehension was reported to rise as speech was accelerated beyond 120 percent. When the speech was increased to 150 percent the male narrator was described to be easier to comprehend. Listeners rated the female's compressed speech more difficult to understand than the male's compressed speech.

In a recent study on the listener's perception of time-compressed speech, Street and Brady (1982) state:

> Speech rate significantly influences interpersonal impressions, and relative to other nonconnect speech behaviors, has received modest research attention (p. 290).

In interview situations Street (1982) found that when an interviewee spoke at 200 w.p.m., he was evaluated more favorably than when he spoke 150 w.p.m., or 225 w.p.m. Psychologists Koomen and Dijlstra (1975) documented that when people are confident of what they are saying they will speak faster and more fluently. MacLachlan (1982) states that if this is true people will associate fast and fluent speakers with confidence.

Brown (1980) claims that listeners have perceived sterotypes that associate "a voice of competence" with prestigious accents and fast speech. Smith, Brown, Strong, and Rencher (1973, p. 146) state that relative fast, fluent speech appears to be, "a particularly salient criterion for competence judgements."

Realizing a listener's perception of time-compressed speech to be of importance, MacLachlan (1982, p. 48) asked the research question: "Will time-compression lead to more favorable speaker perception in the context of typical advertising messages; will they be thought of as more friendly, enthusiastic, and knowledgeable?" Using a male and a female narrator, MacLachlan produced four commercials (provided by a leading

advertising agency). In order not to bias the results, the commercials did not contain any music. Each commercial was compressed from 60 to 48 seconds. The four groups consisted of 31 business administration graduate students. Each group listened to either a fast or normal version of the commercials. Group members were asked to rate the spokesperson according to their friendliness, knowledgeability, enthusiasm, and energy on a six point semantic differential scale (Berlo-Lemert-Mertz Classification, 1966). The results from the "favorability" scale showed the faster spokesperson to be more favorable in 13 of the 16 scales. There was no significant difference regarding perception of "friendliness." The spokesperson's "knowledge" level was rated more favorable for the time-compressed versions in three out of four cases. Speaker "enthusiasm" for the time-compressed version was more favorable than the normal version in all cases. MacLachlan reported that all groups considered the time-compressed narration to be more energetic than the normal version.

Effects of Difficulty of Material

Interested in the outcome of the differences between easy and difficult material, Hausfeld (1981) recorded six prose passages selected from the Science Research Associates Reading Laboratory. The easy passages were for reading at age 13. The three difficult passages were for reading at age 19. Thirty introductory psychology students participated in the study. The presentation speeds were 180, 290, and 380 w.p.m. Analysis showed that students were able to comprehend easy material presented at 180 w.p.m. significantly better than material heard at 290 and 380 w.p.m. Hausfeld reported that reading and listening do

not differ in comprehension levels, but may differ in optimun speeds.

> The similarity of reading and listening comprehension reflects the fact that the two tasks involve similar syntactic and semantic processes. These processes are central to comprehension (p. 317).

Hausfeld found that with easy material, the 290 and 380 w.p.m. speeds did not differ significantly.

For difficult material, 290 w.p.m. was significantly more effective than 180 w.p.m. A speed of 380 w.p.m., produced an intermediate level of efficiency not significantly different from either of the other speeds. Hausfeld reported the optimum speed to be 290 w.p.m., for difficult material and 290 or 380 w.p.m. for easy material. These findings agree with those of Foulke (1971) who found a significant drop in comprehension when presentations exceed 290 w.p.m. for both easy and difficult materials.

The hypothesis of fast readers being able to comprehend accelerated speech better than slow readers was tested by Goldstein (1940) and Jester and Travers (1966). These two studies compared listening and reading selections presented at several word rates. Comprehension was reported to decline as word rate increased. Listening comprehension was shown to be superior to reading comprehension up to 200 w.p.m., and inferior after that. At 350 w.p.m., simultaneous reading and listening resulted in better comprehension than from either individual mode of presentation.

Goldhaber (1967) and Reid (1968) found comprehension to decrease as rate increased. Simplified material was reported to result in better comprehension than more difficult material.

The effect of comprehension on compressed versions of certain types of material was investigated by Ernest (1968) who presented selections of technical and historical material along with a lecture section of the

Brown Carlsen Listening Comprehension Test to 52 college psychology students. Passages were spoken at 145, 120, and 160 w.p.m. Comprehension results showed that students who listened to technical material performed better than those who listened to historical material. No significant differences were found in their performance when different rates of the Brown Carlsen test were employed. The author concluded:

> The relationship between listening comprehension and academic achievement is more predictable when the material presented is well within the ability range of the subjects (p. 157).

Even though Ernest showed comprehension to be higher when material contained technical material rather than historical material, the rates used were within a normal speaking rate rather than an accelerated rate.

In May, 1978 MacLachlan presented four time-compressed commercials to Young and Rubicam, New York. After seeing the commercials this report was prepared by Y & R Creative:

> The time-compression device is interesting, especially for commercials which must deliver multiple copy points. But is it little more than an intriguing mechanical gadget? Computerized tricks do not mean imaginative execution. Moreover, mood commercials and other executions which do not depend on the number of points delivered for their value could actually be damaged by a possible chaotic effect, or at least a disturbing impression of poor timing. Eventually, excessive use of time-compression could bring an undesirable element of sameness to commercials and would add to real and apparent clutter (p. 1).

The content of a commercial may indeed determine whether it should be broadcast in a compressed form. MacLachlan (1979) reported that a compressed version of a commercial might not be as effective with "mood" products or with commercials that contain music. A further question on content in the 1980 issue of BBDO (Batten Barton, Durstine and Osborne, Inc.) states:

> Without question, it's too early to know all the creative

> and media implications of time-compression. But this much is certain: The technique should be used selectively. It's appropriateness and degree of application must be judged on a commercial by commercial basis. Ultimately, time-compression will be only as good as our understanding of how and when to use it effectively (p. 11).

Effects of Training

Listener variables affecting comprehension show that some people are able to comprehend compressed speech up to 350 w.p.m. or more, with little or no prior experience. Others show poor comprehension, even after prolonged exposure (Foulke, 1965). The effects of training on listener comprehension has received much attention by researchers. In 1963 Orr began studying the applicability of training to achieve higher rates of comprehension and retention. In 1965 Orr collaborated with Friedman and Williams to test the use of speech compression on retention. Material compressed to 325 w.p.m. was played for 32 male college students over a period of several weeks. During that time word rate was reported to increase until a final rate of 475 w.p.m. was reached. A comparison of post-training and pre-training test scores showed an improvement in comprehension of 29.3 percent. In 1968, Orr and Friedman found that, with training, comprehension improved from a mean of about 40 percent on Day One, to a mean of 70 percent on Day Five. Orr and Friedman (1968) state:

> Evidence is found in studies showing the great capacity of the human auditory mechanism, and in the fact that reading rates often exceed speaking (or listening) rates. Under the impact of practice, listeners may be able to improve their comprehension levels (p. 6).

In another test, Orr presented a speech compressed to 300 w.p.m. Results showed no loss in comprehension. At 425 w.p.m., students were reported to be able to comprehend 80 percent of the material. Orr (1968,

p. 289) stated, "Long-term retention might be enhanced because of the close attention required in listening to a compressed presentation."

However, Foulke (1964, p. 264) found no improvement in comprehension from training. Using a pre and post test, Foulke measured comprehension levels of blind students listening to a presentation at 350 w.p.m. Approximately 25 hours of the training was exposure to: a) speech at a constant rate of 350 w.p.m., b) speech that was gradually increased from the normal rate to a final rate of 350 w.p.m., c) the same as "a" but with frequent pauses for questions about the material, and d) the same as "b" but with frequent pauses for questions. Foulke reported no significant differences between pre and posttraining test scores for any of the treatment groups.

Friedman, Orr, Freedle, and Norris (1966) compared the comprehension test scores of listeners after 35 hours of mass practice. The listeners had previously received 12 to 14 hours of distributed practice. Comprehension of the distributed practice group was reported to be as good as comprehension from the mass practice group. Friedman (1966) presented listening rates, ranging from 425 to 475 w.p.m. to seven male college students for five days, at eleven hours a day. This study confirmed Friedman's previous finding that comprehension can be improved by simple practice routines to speeds of about two and one half times normal speed.

Voor and Miller (1965) presented listening selections to 50 college freshmen and sophomores. Selections were heard at 380 w.p.m. (17.5 minutes). At the end of each selection students were tested for listening comprehension. A slight improvement in comprehension was found during the initial practice trials. After seven minutes of exposure to

time-compressed speech, listening comprehension scores were shown to improve significantly.

Lass, Foulke, Nester, and Comerci (1974) investigated the relationship between the influence of training on listener's rate preference, and comprehension of time-compressed speech. In this experiment, a professional male narrator read the first paragraph of Fairbanks' (1960) prose passage, The Rainbow Passage. A total of 55 words were studied. The recording was altered with a speech compressor to nine rates in increments of 25 words-per-minute from 100 to 300 w.p.m. Pairs of rates were presented for rate judging. Fifteen students in an experimental group received exposure to the time-compressed prose material in 12 listening sessions over a six-week period. A control group of 15 students received no exposure to time-compressed speech. Before and after the six-week period, both groups were given listening rate preference and listening comprehension tasks. As reported, exposure to time-compressed speech altered the students listening rate preference to 225 w.p.m. Comprehension skills, however, were not significantly improved.

Listener Reaction

Listener reaction to compressed speech was evaluated by Hass (1972) in a study where students participated in three weeks of tests from a real estate course at the University of Hawaii. Hass described student perception as having "some specific characteristics":

> Over half of the respondents commented on the compressed speech procedure, and most referred to the problems in sound quality, sound fluctuations, and splicing. Most students listened to the tape more than once; the average was slightly over two times. Sixty percent reported a preference for compressed speech tapes over large classroom lectures. Nearly

> all of the students reported that the opportunity to repeat a lecture is useful... A substantial majority of the speech tapes combined with smaller classes, rather than large lecture classes (p. 4).

Gleason, Calloway and Lakota (1974), Duker (1979), and Riding and Vincent (1980) noted that students were more attentive when listening to compressed speech: "The compressed speech seemed to be more effective in gaining and holding the students attention" (Riding and Vincent, p. 265).

Tests conducted by Orr and Friedman (1968) showed an improvement in listener comprehension from practice. The students reported that their powers of concentration had improved.

Foulke and Sticht (1967) stated when listeners had control over the rate of presentation, they "generally" preferred a rate 25 percent faster than normal.

Lass and Cain (1972) compared the relation between a listener's own rate of speech with a preference in listening rate. Thirty students from the medical school at West Virginia University performed an oral reading task. Each student read a six-sentence passage five times. Twenty-four hours later each student indicated his listening rate preference based on 36 pairs of readings. Students heard two versions of each of the 36 passages, as recorded by a professional male narrator. The rates of presentation were increased in increments of 25 percent from 100 to 300 w.p.m. Lass and Cain reported that a significant (+.61) relationship existed between the "most preferred" listening rate and reading rate. The student's "most preferred" listening rate included 150, 175, 200, and 225 w.p.m. It was reported that students with slower than average reading rates frequently preferred slower than average listening rates. Students with faster than average reading rates preferred faster than average listening rates.

LaBarbera and MacLachlan (1979) conducted two experiments to determine listener's preference to a radio broadcast presented at different rates. In the first experiment, 49 students enrolled in a graduate class at New York University heard different rate segments of the radio broadcast, "The Non-Assassination of John F. Kennedy." The speed was increased at increments of 25 percent. The presentation ranged from 50 percent of normal speed to 225 percent of normal speed. Each speed was compared with a speed 25 percent higher. From the two rates, students were asked to make a paired comparison. Preference was reported to be to 130 percent compression.

In the second experiment, a different group of 43 students listened to a radio talk show. "The Cancer Epidemic" was discussed by the radio announcer and a doctor. Presentation rates consisted of normal, 125 percent, 133 percent, and 150 percent speeds. Results from the paired comparison of rates showed 94 percent of the students preferred the 125 percent compressed version. Seventy-nine percent of the students preferred 133 percent, and only 35 percent preferred 150 percent to the normal speed. From these results, LaBarbera and MacLachlan (1979) found 130 percent to be the preferred listening rate.

> Our findings suggest that broadcasters should be extremely careful to avoid rates of speed slower than normal, and should strive to maintain a pace of about 30% faster than the typical rate of speech (p. 33).

Effects of Retention

In testing listener retention of compressed speech, Robert Glen George (1970) assigned 88 students to eight listening sections. A simplified version of the Nelson Denny Reading Test (rated for third grade level), and the original version (rated for college level), were

recorded at 175 w.p.m. by a male narrator. Rates of presentation were 275, 325, and 375 w.p.m. A 36-question multiple choice test was given immediately after the tapes were played. To test for retention, the same test was given one day or week later. George reported that more forgetting occurred at the lower rate of 175 w.p.m. than at the three higher rates. He concluded that presentations of simplified materials was accompanied by some initial forgetting, but the amount of additional forgetting (with further passage of time) was not as great as that for the original material. In a similar finding, Woodcock and Clark (1969) reported accelerated listening rates of 228 to 328 w.p.m. were more efficient in learning and retention than the lower rate of 178 w.p.m. Their retention tests were presented to elementary school age children.

In another retention test, Barabasz (1968) ran a study to investigate whether accelerated lectures were recalled and retained as well as lectures presented at normal word rates. In this study, 118 human behavior and development students listened to two recorded lectures. The tapes were recorded by the regular professor for the class. Lecture 1 was presented to Group A (N = 45) at a normal speed (21 minutes) and to Group B (N=50) at an increased speed (14 minutes). Lecture 2 was presented to Group B (N = 52) at a normal speed (18 minutes) and to Group A (N = 45) at an increased speed (12 minutes). Group C (N = 21) was not exposed to either lecture. Four true-false tests were given to test for retention. A 30 item recall test was given to Groups A and B after each presentation. Two to three weeks after the students heard the lectures, a 20 item retention test (based on the original 30 item test) was administered to Groups A and B. t-tests showed no significant differences in test scores of control and experimental groups for any of

the four tests. As reported, presentation time was reduced one-third, without any significant loss in recall and retention.

MacLachlan and LaBarbera (1978) ran experiments of time-compressed television advertisements. A variable speed projector was used in conjunction with a computerized time-compression device, the Lexicon Varispeech II. Presentation rates were 25 percent faster than normal (the normal rate of the commercial would be 30 seconds and the time-compressed commercial would be 24 seconds). Six television commercials (five 30-second and one 60-second) supplied by a major New York advertising agency were used to test the effectiveness of the time-compressed commercials. Thirty-five undergraduate students randomly assigned to one of two groups were asked to rate the six television commercials on a six-point semantic differential scale that ranged from "very dull" to "very interesting." Two days later, without prior warning, the students were asked to name the brands of products they saw advertised two days ago. Results from the two groups showed the level of interest in each of the six commercials. In five of the six cases, the faster versions were rated the "most interesting." Results from brand recall two days later were not appreciably different for the two test conditions. Recall was higher for the faster-paced commercial in three test situations, higher for the normal speed commercial in two situations, and were equal for one commercial.

Further testing by MacLachlan and LaBarbera (1979, p. 33) involved time-compressed radio commercials. The objectives of the experiment were 1) to determine which speed would result in greatest brand recall, 2) to determine which speed would result in the greatest brand recall two hours later, and 3) to determine which speed would result in the greatest recall using the Burke-type measuring test.

In the study, six radio commercials containing little or no music were selected from a sample of 18 commercials. The commercials were from radio stations and the National Association of Broadcasters. Time-compression of 130 percent was selected by MacLachlan and LaBarbera, as determined from their first two experiments to establish listening rate preference and performance. In the recall study, 41 undergraduate students at a major northeastern university were randomly divided into two groups. The testing design for each commercial enabled one group to act as a control group by hearing the commercial at the normal speed. The other group served as the treatment group, hearing the commercial at 130 percent normal speed. The students were told that six radio commercials would be played and they were to rate each commercial on an 8-point scale ranging from dull to interesting. Two hours later the students were asked which advertised brands they could remember. For three commercials, the Burke-type recall question was used. The Burke-type test asked the students if they remembered hearing the commercial, and if so, to write down everything they could recall about that commercial.

Results showed that compressed commercials were rated more interesting than those presented at a normal rate. In all instances recall was rated higher for the time-compressed commercials. The three commercials tested by the Burke-type recall measure showed a mean of 67 percent greater recall in all time-compressed commercials compared with the non-compressed commercials.

MacLachlan (1984) stated his objection to the above mentioned test conducted with LaBarbara. He noted that the students were asked specifically to attend to the commercials "so their attention was focused directly on the commercial, which made it an unnatural setting."

MacLachlan said a better study would be one similar to that run with Siegel, where students would hear commercials embedded into the radio program. In that study, MacLachlan and Siegel (1980) investigated the concept of broadcasting three commercials per minute by using one 12-second commercial and two 24-second commercials. The study consisted of 131 students enrolled in an introductory psychology class at the State University College, Oneonta, N.Y. The students were told they would see a portion of the television program "60-Minutes" for class discussion. The topic covered a possible fraudulent cancer cure clinic in California. Two commercial breaks were dubbed into the program. In the experiment students were assigned at random to either a control or treatment group. The control group (Group 1) saw four time-compressed commercials. The treatment group (Group 2) saw the same four time-compressed commercials plus two additional commercials. Immediately after seeing the program the students filled out a brief questionnaire in which a question concerning television commercials and clutter was included. The question was, "Did the television commercials interfere with your ability to understand parts of the program?" A five-point scale ranging from "no interference" to "considerable interference" was used. Results from the five point scale indicated that both groups had no objection to the commercials in the presentation. Two days later, the students were asked to write down the brand names of the products (unaided recall test) in the commercials. In all cases, the time-compressed versions were better remembered. MacLachlan and Siegel found:

> On the average, recall for the time-compressed versions was 36 percent greater than recall for the normal versions. All commercials performed better in the time-compressed versions (p. 53).

After they had answered the unaided recall question, the students were

told the brand names and were asked to write down all they could remember about the commercials (aided recall). Results of the aided recall scores showed that the commercials gained an average of 40 percent in the Burke Marketing Research score for the compressed version. In response the authors stated:

> Levels of statistical significance associated with these findings are very high. Some commercials benefitted more by the time-compression treatment than others. We cannot be certain why this is so. In practice, an agency might wish to experiment with several different rates to find the best pace for the particular type of message used by a client (p. 54).

Since time was saved by compressing the two 30-second commercials to 24-seconds, there was space left to add a 12-second commercial into the one-minute time slot. Only Group 2 saw the two different 12-second Hertz commercials. The "unaided" brand recall test reported to be 38 percent recall. MacLachlan and Siegel found that 47 percent of the students demonstrated recall of the first commercial and 46 percent demonstrated recall of the second commercial. To evaluate viewer perception, the students were asked whether they were aware of anything unusual about the commercials. None of them indicated that they were.

Riter, Balducci, and McCollum (1982, p. 41) examined the impact of time-compression on television advertising by using commercials compressed to 25 percent (30-second commercials were compressed to 24-seconds). Three types of measurement tests were administered:

1) A clutter/awareness test. The "clutter" sequence consisted of four unrelated test commercials separated by three constant control commercials.

2) A main idea registration measurement where respondents were asked to report their perception of the commercial's main idea.

3) A motivation test that asks, "If you were to purchase ---, which

of the following brands would be your first choice?

The three commercials tested were an insurance commercial, a print-out calculator spot, and a sensor calculator spot. Viewers of the insurance commercial were life insurance policy holders, and viewers of the calculator spots were calculator owners. A sample of 1,777 adults were recruited through a random direct-mail procedure. Groups of 25 were exposed to seven commercials in a "clutter" sequence. In this test respondents were asked to report brand names and product types for as many of the commercials as they could remember seeing. Results of this test showed that the insurance and printout calculator spots generated slightly higher awareness in the compressed form.

The sensor calculator spot was slightly more effective in its regular 30-second length. Recall of the product's main idea showed that two of the three paired comparisons were higher in the 24-second version. Recall of the sensor calculator commercials were identical for each of the two lengths. Impact from the commercial's ability to persuade viewers attitude was higher for the time-compressed versions of the insurance and printout calculator spots. The sensor calculator commercial was shown to have a more persuasive impact in the regular 30-second version. The authors state:

> This study did not include diagnostic measures which might have provided some insight as to why the sensor calculator presentation was so much more effective in its 30-second format. However, it might be hypothesized that some executions and product stories, if rather complex, might be more greatly affected by compression. Further research would seem to be appropriate (p. 42).

Effects of Testing Methods

The level of difficulty of a listening selection may be determined by

the use of different testing methods. But, as in other research findings, testing methods may vary from one particular experiment to another. A testing system used in many research settings is the Flesch Formula. The formula's foundation consists of average sentence length, average number of syllables, percentage of personal words, and percentage of personal sentences. The Flesch system uses a formula for rating "easy" or "difficult" material. Short words and sentences are rated "fairly easy" for a sentence with an average of four words. "Very difficult" sentences would contain 29 or more words (Burton, 1983). Nelson (1948) and Harwood (1955) found the comprehension of a listening selection rated difficult by the Flesch Formula to be more adversely affected by increasing the word rate, within the range from 125 to 225 w.p.m., than a listening selection rated relatively less difficult by the same formula. The Flesch Formula is also used in advertising to determine whether an ad is geared for a particular audience.

As an industry heavily involved with attitudes and behaviors, research testing of compressed speech could assist broadcast advertisers. However, Zeigler and Howard (1984) state that testing cannot prove conclusively that only one method or plan is right or wrong beyond one specific set of circumstances.

> There is the position of the message. It may be within a serious newscast, or exciting sportscast. The mood of the audience may be different from the one experienced during an unnatural setting (p. 249).

Murphy (1980, p. 202) states that, "The atmosphere or environment in which a commercial is heard affects the public attitude."

Different types of research methods are employed to determine a commercial's effectiveness: a true-false questionnaire, multiple-choice questions, indirect questions that require written answers or

explanations, rank testing (where a customer rates the commercial as to its degree of interest or believability), or the use of any number of rating scales.

Many national testing organizations use the telephone to measure recall. At Radio Recall Research, Inc., Lehder reported that exposure is generally followed (within 24 hours) by a recall measure. She also said some companies use theater audiences to test their commercials. Others recruit beforehand by stating "We are looking for some people to participate in a study. . . ."

Radio Recall uses a forced exposure where people in a shopping mall are invited into a room and screened for age, product usage, or other qualifications. Then, the qualified respondents are asked to fill out two short questionnaires in an interviewing center. A radio plays in the room and three commercials are embedded with the music which is suited to teens or adults. Participants are called within 24 hours and asked unaided and aided questions about each commercial. Standard "day after" recall questions are asked about each brand which the respondent claims to remember. Lehder said although each company may have different testing methods, most recall tests are conducted 24-hours after exposure. "The 24-hour recall was originally established as a standard because it permitted both sufficient recall levels and discrimination among commercials."

She noted that the same commercial may be tested several times, and in different cities. Tortolani (1983, p. 256) of the Rumrill-Hoyt advertising agency said, "It takes time for spots to grow on an audience; therefore, commercials should be pretested more than once.

Zeigler and Howard (1984) state that the phrasing of a question may

lead to an invalid response. Tests that contain overlapping questions may confuse the respondent:

> Generally, only one message factor or effect should be tested at a time so that findings obtained can clearly be linked to the elements under investigation. If a 60-second commercial with a jingle shows more information than a 30-second commercial with voice only, there is no way to tell which message variation makes the difference (p. 249).

To test time-compressed television commercials, MacLachlan and LaBarbera (1978) asked viewers to rate their level of interest from "very dull" to "very interesting" on a six-point semantic differential scale. To test recall, an unaided brand recall question was asked two days later. The participants were asked to name the brands they saw advertised two days before.

To test the effectiveness of time-compression on a radio advertisement, LaBarbera and MacLachlan (1979) used an eight-point semantic differential scale. The test asked students to rate six radio commercials from "dull" to "interesting." Two hours later the students were asked to name the brands they could remember. For three of the ads a Burke-type aided recall question was used. Aided recall tests give the brand name and the participants are asked to describe all they can remember about the commercial.

Turner at Burke Marketing Research reported that the company uses recall testing exclusively for television and print advertising. Burke Broadcast Research for radio was discontinued in 1981. Turner also stated, "Most recall tests are conducted 24-hours after exposure, even though every company is different."

To test listener perception of time-compression, MacLachlan (1982) used four six-point semantic differential scales. Adjectives closely associated with the Berlo-Lemert-Mertz (1966) classification scales were

used in the study. The scales identify three basic factors which subjects use to evaluate source credibility. MacLachlan substituted friendly for safety, knowledgeable for qualification, and enthusiastic and energetic for dynamism.

The instrument used by Riter, Balducci, and McCollum (1983) tested the impact of time-compression on television commercials in a cluster/awareness situation. An unaided brand recall test asked respondents to report brand name and product type for as many commercials as they could remember seeing in the sequence.

On testing a commercial's effectiveness, Zeigler and Howard (1984) state:

> Both commercial writers and producers are realizing that a certain amount of scientific input from their partners in research can enhance communication effectiveness in numerous ways. It can assist the creative team in choosing, among other things: 1) which overall message theme (of several proposed) is the most credible, important, and relevant to a given audience, 2) which combination of words, sound effects, music, and/or visual actions express a specific theme most clearly and memorably, and 3) which commercial presenter, product setting, and jingle or camera technique does the best job of attracting attention, differentiating one brand from another, and stimulating action (p. 247).

CHAPTER III

METHODOLOGY

Introduction

This chapter will describe the testing methods used to determine radio advertising recall. Included in this chapter is a description of the subjects, the instrument used in collecting data, the procedures for collecting data, and the procedures for analyzing the data.

Description of the Subjects

The population surveyed included 43 broadcasting students from the School of Journalism and Broadcasting, 128 students enrolled in "Introduction to Speech Communications," at the speech department, and 42 students enrolled in "Introduction to Marketing," at the School of Business Administration at Oklahoma State University during the fall semester of 1985. Of the 213 students, half served as the control group, and the other half served as the experimental group.

Since the students were not randomly assigned to the two groups, we have a "compromise design" rather than a random or "true" design. This research design uses samples from the same population, or samples as alike as possible (age and level of education).

The instructor of the speech communications class asked the students to sign up for an extra credit report, by reporting on an outside

listening activity. Students reported to a listening center every 15 minutes. The broadcasting students were sent to the listening center during their regular class time. Ten to 12 students reported to the conference room every 15 minutes, until all 40 students had participated in the listening project. The instructor of the marketing class gave the students a sign-up sheet during their regular class time that allowed 12 students to report to a testing center in the library every 15 minutes. The students were told they would receive an extra credit point by participating in the survey. Participation involved filling out a consumer survey form for "Triple R Research." The students were told Triple R was conducting interviews in the area. Randomness was achieved by alternating the program for each group of students. Forty groups were established. The first group heard the commercials at the normal rate and the next group heard the same commercials at the compressed rate until all groups were tested.

Instrument

The three commercials used in this study were chosen from a total of nine supplied by the National Association of Broadcasters 1984 CLIO Award Winning Radio Commercials. The three commercials were chosen for their applicability to the recall questionnaire, because they contained a minimum of music, and because of their adaptability to any region (See Appendix D).

The commercials were compressed to 130 percent by Dr. James MacLachlan of the Rensselaer Polytechnic Institute, Troy, New York. To compress the commercials, MacLachlan used a broadcast quality Lexicon II Varispeech Compressor which maintains the original balance between pauses

and speech by compressing the entire message.

Music for the 10-minute radio program was supplied by Rick Ehmen, general manager of radio station KVRO-FM, Stillwater, Oklahoma. The music was selected from the Top 40 chart and was suited for the demographic age group in this study.

The two taped programs were professionally prepared by the Oklahoma State University Audio Visual Center's Recording Studio. The program was calibrated to play at a predetermined volume level. Programming guidelines as set by Radio Recall Research were followed for this study:

Two Minutes of Music "Walking on a Thin Line"
by Huey Lewis and the News

Commercial (30 or 60) (Quinch Peach)

1.5 Minutes of Music "Radioactive" by The Firm

Commercial (30 or 60) (Friendship Cottage Cheese)

1.5 Minutes of Music "Playing To Win" by The Little River Band

Commercial (30 or 60) (Sedgefield Jeans)

3 Minutes of Music "Black is Black"

To give the sound of a live radio program, station ID's were placed in the program at the beginning of the tape, and before the last three minutes of music. The order of the commercials was identical for each tape.

A basic demographic questionnaire (Appendix E) and a recall study questionnaire (Appendix F) was supplied by Radio Recall Research, Inc., Holmdel, New Jersey. The first set of questionnaires screened for demographics. The second questionnaire was a standard "Day After Recall Telephone Callback" questionnaire. Listener day-after recall questions for the three normal rate and three 130 percent compressed commercials were measured by positive responses to questions 3, 4 or 5 on the

callback interview.

Question 3 states: What products were advertised on the radio program you heard yesterday in the testing center? What brand was that?

Question 4 states: (For each product not mentioned) Do you remember hearing any radio advertising yesterday for. . . .

Question 5 states: (Ask for each brand listed, regardless of whether mentioned already) You may have already mentioned this before, but in the interviewing center yesterday, do you remember hearing any radio advertising for: A (brand name) B (brand name) C (brand name)? If yes, ask Question 6.

Question 6 asks a series of questions which can be proved through testimony. For proven recall the respondent must give accurate general elements of the commercial or give the specifics of the message (may include incorrect testimony, but must state something very specific).

From this three-level probe, a comparison of listener recall was made between the two rates of commercials.

Procedure

The procedure for collecting data on advertising recall involved telephoning each student within 24 hours after exposure to the commercials. Those students who recalled hearing a radio playing in the testing center were asked unaided and aided questions. Recall questions asked each student to name the product and brand they could remember hearing. Only 192 of the 213 students were contacted for this study.

Statistical Treatment

To test the hypothesis of this study, an analysis was made to check

what effects rate had on individual listener recall. One hundred ninety-two of the 213 students who participated in the study were contacted within 24 hours and asked aided and unaided recall questions. Forty groups were tested over three days. Each group was separated from the others according to the times the programs were heard. Internal testing (within the groups), and external testing (against other groups) were made to determine which treatment (rate) had the greatest effect (recall).

Testing of the 192 students was made in groups ranging from one to 12, with one group consisting of 26 students. Analysis was made to determine if responses varied due to the size of the group, or the time the program was heard. Also, a comparison was made between the level of recall of journalism/broadcasting students, speech students, and the marketing students.

To test recall, each response was coded and entered into a computer at the Oklahoma State University Computer Center. The data were analyzed using the Chi Square. Calculation of the Chi Square yielded several cells with expected frequencies less than five (See Appendix G). The unaided and aided recall questions were coded into responses of high, medium, low, and none. A combination of answers determined the level of recall. Both "product" and "brand" recall questions were used to determine the levels of recall. To determine if there was a difference between recall responses and the demographic questionnaire, a comparison was made by using the Chi Square.

The Chi Square is a test of significance because there are few assumptions associated with it. The level of signifance was set at .05 for all analyses. Each level of analysis included a null hypothesis (Ho)

1) Recall of product by rate of the program (100 percent or 130 percent).

2) Recall of brand by rate of the program (100 percent or 130 percent).

Experimental Design

Variables

Dependent Variable: Recall. Determined by amount of correct responses to questions 3, 4 and 6 on telephone callback questionnaires.

Independent Variable: Presentation rate of taped commercials. Controlled by the assignment of given rate (normal or 130 percent compression) to selected groups of students.

CHAPTER IV

FINDINGS

This chapter presents the results of the study regarding the recall levels of three time-compressed radio commercials. Included in this chapter is the analysis of data collected from the tested hypotheses.

Two hundred thirteen college students participated in the study to determine the effects of time-compressed radio commercials on recall. The students were from the School of Journalism and Broadcasting, and the Departments of Speech Communications and Marketing at Oklahoma State University. All of the students participated by filling out product usage and demographic questionnaires while a radio was playing background music (the three commercials were heard after each song). To simulate a "real" situation where a radio is playing while its audience is doing something else, no mention was made to the radio during the times the students were filling out the questionnaires. Half of the participants heard three time-compressed commercials, and the other half heard the same three commercials at a normal rate. The rates of presentation were set at 100 percent (normal rate) in Program I and 130 percent (compressed rate) in Program II. Recall measurements were secured through a telephone questionnaire within 24 hours after the students filled out the demographic questionnaires. A total of 21 participants either could not be reached or did not remember a radio playing in the room. One-hundred ninety-two respondents were included in the final study.

Statistical Analysis

The main purpose of this study was to determine the effect of rate of presentation (normal or compressed) on the recall level of students hearing three radio commercials. After the data was collected, the results were analyzed at the Oklahoma State University Computer Center.

Data were analyzed using the Chi Square. This method of statistical analysis is used with samples that have relatively large expected frequencies. The level of significance was set at .05 for all analyses. Each level of analysis includes a null hypothesis and a research hypothesis, one of which was rejected and one accepted. The null hypotheses (Ho) and research hypotheses (H1) tested in this research were:

Ho: There is no difference in the product recall levels of three commercials and rate of presentation.

H1: There is a difference in product recall in the three commercials and rate of presentation.

Ho: There is no difference in the brand recall levels of three commercials and rate of presentation.

H2: There is a difference in brand recall in the three commercials and rate of presentation.

Hypothesis 1: From information in Table I it can be concluded that there is a difference in product recall of the three commercials based upon the rate of presentation.

TABLE I

RECALL OF PRODUCT BY PROGRAM

	Rate of Presentation		
Recall	100%	130%	Respondents
Low	13.02%	7.81%	N=40
Med	6.77%	6.25%	N=25
None	25.00%	41.15%	N=127

Df= 2
Prob=.017
Chi Sq.= 8.112
C=.201

The null hypothesis can be rejected and the research hypothesis accepted. Calculation of the Chi Square for product recall shows there was a significant difference between the two programs. Of the people in Program I (N = 86), 13 percent had low recall. Of the people in Program II (N = 106), 7 percent had low recall. Probability for recall of the three normal rate commercials by product was .0173. More people had low recall from Program I; however, there was a higher percentage of people in Program II in the "none" category (N = 79). The data was generated to examine the effects of rate of presentation upon the commercial product recall. From this information it can be concluded that while more students who heard Program I than Program II had higher recall, there were more people in Program II than in Program I.

The degrees of freedom equals 2. In the Chi Square table the largest critical entry is 5.99. Any observed Chi Square that equals or exceeds that table entry is significant at least at the .05 level of confidence.

Since the Chi Square for "product by program" was 8.11, the differences in recall as large as those between Program I and II would occur by chance less than 5 times in 100. The contingency table shows that while more people were in Program II in the "none" category, more recall was from Program I in the "low" recall category. Among all respondents, however, more were unaware than aware of the commercials.

Hypothesis 2: Based on the analysis of data indicated in Table II the null hypothesis can be rejected and the research hypothesis accepted.

TABLE II

BRAND RECALL BY PROGRAM

	Rate of Presentation		
Recall	100%	130%	Respondents
Low	11.52	7.85	N=37
None	33.51	47.12	N=154

Df=1
Prob=.04
Chi.Sq.=3.862
C=.141

The analysis indicates a significant difference in "brand" recall of the three commercials when the presentation rate is varied. The degrees of freedom in this analysis equals 1. The Chi Square table shows the largest critical entry is 3.84 at the .05 level of confidence. Since the Chi Square for "brand by program" is 3.86, the test is significant at the .05 level of confidence. Recall differences as large as those between Program I and II would occur by chance less than 5 times in 100. The contingency table shows that while more people heard program II, there

was more recall from those who heard Program I, in the "low recall" category. Among all students, more were unaware than aware of the commercials. Of the 86 students listening to Program I, 22 or 11 percent had low recall. The cell Chi Square for Program I in the "low recall" category was 1.7. In Program II (N=105) 7.85 percent had low recall. A significant difference appears in recall between Program I and Program II.

When the commercials were tested for the number of correct responses on an individual basis on aided recall, no significant differences were found (See Table 3).

For the Sedgefield Jeans commercial, the degrees of freedom equaled 1. The Chi Square table showed the largest critical entry to be 3.84. Since the Chi Square is 2.68 for "aided recall of Sedgefield Jeans" it is less than 3.84 and therefore rejected at least at the .05 level of confidence.

The Friendship Cottage Cheese commercial, when tested for individual aided recall, did not exceed the Chi Square table entry for one degree of freedom at the .05 level of confidence. The Chi Square of .735 for recall of the cottage cheese commercial is less than 3.84, and was therefore rejected.

Aided recall results for the Quinch Peach commercial was too low to compute and therefore was rejected.

TABLE III

AIDED RECALL OF SEDGEFIELD JEANS BY PROGRAM

	Rate of Presentation		
Recall	100%	130%	Respondents
Yes	1.0	0.8	N=56
No	0.4	0.4	N=133

TABLE IV

AIDED RECALL OF FRIENDSHIP COTTAGE CHEESE BY PROGRAM

	Rate of Presentation		
Recall	100%	130%	Respondents
Yes	0.3	0.3	N=29
No	0.1	0.1	N=160

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this research was to determine if any differences occured between two sets of students hearing three commercials at a normal rate of presentation and the same three commercials at a 30 percent faster rate.

The 213 undergraduate students tested were enrolled in speech, journalism/broadcasting, and marketing classes during the Fall 1985 semester at Oklahoma State University.

From the 213 students, 192 recall analyses were made. Twenty-one of the 213 students either could not be reached by telephone for responses, or did not remember hearing a radio playing in the testing center.

While in the testing center, the students were told they were participating in a national consumer survey and were given a series of questionnaires on product usage and demographics. The radio was playing but was not mentioned as being a part of the experiment. Within 24 hours after hearing the program, each student was telephoned and asked standard recall questions. Responses from the "aided" and "unaided" brand and product questions were coded and analyzed using the Chi Square. Significance was set at the .05 level of confidence.

Conculsions

From the Chi Square analysis, the two hypotheses were tested for significance. The two hypotheses were stated in null and research form:

Ho: There is no difference in the product recall levels of three commercials and rate of presentation.

H1: There is a difference in the product recall levels of three commercials and rate of presentation.

Ho2: There is no difference in the brand recall levels of three commercials and rate of presentation.

H2: There is a difference in the brand recall levels of three commercials and rate of presentation.

The research hypothesis (H1) was accepted and the null hypothesis rejected.

From the Chi Square analysis, recall of product by speed of presentation was significant at the .05 level. With two degrees of freedom, the probability was .017. Chi Square was calculated to be 8.11 with the contingency coefficient (C) of .201. From this analysis we may say that differences as large as those between the recall levels of Program I and Program II would occur by chance at least 5 times in 100. While more people who heard Program II were in the "none" category, more recall was from Program I in the "low" recall category. Differences in medium recall of Program I and II were slight, 6.77 and 6.25 respectively.

Among all respondents however, more were unaware than aware of the commercials.

Research hypothesis (H2) was also accepted and the null hypothesis

rejected.

Brand recall by speed of the commercials showed the normal speed to be more significant at the .05 level than the accelerated commercials. In "low" recall, 11 percent in Program I recalled hearing the brand names of the normal rate commercials. In "low" recall, 2 percent recalled the brand names from the accelerated commercials. There were no responses from the "medium" recall category. More people in Program II were unaware of the commercials. More people were in the "none" category than the "low" recall categories.

Further analysis showed three other significant differences at the .05 level.

From the Chi Square analysis, a significant difference was found between program speed and the time the programs were heard.

At the .05 level, probability was .054. Data from each cell showed the percentage of recall for the brand name mentioned in the commercial in the "low" recall category in groups of 1-4 (7.33) to have higher recall. Group sizes of 5-8 had a 6.28 percent recall followed by groups of 9-12 (5.76). The larger group of 26 students had zero recall.

Further analysis also showed a significant difference between product recall and the size of the group. Probability for product recall by size of the group was .033. A higher percentage of people was in the "low" recall groups than in the "medium" recall groups. Groups containing 5-8 students had higher recall followed by groups with 9-12 and 1-4, respectively. Overall, there were more students who could not remember any commercials.

Another variable that may contribute to the recall levels of the different rates of programs could be the time of day the program was

heard. A significant difference was found in recall levels between those students who heard the commercials in the morning rather than the afternoon. With a Chi Square of 6.82, one degree of freedom and a probability of .009, a higher percentage of people in the morning fell into the "low" brand recall (3.8) than those who heard the programs in the afternoon (1.7). We can say, then, that recall differences as large as those between morning and afternoon would occur by chance less than 5 times in 100 for both brand recall and product recall. Among all respondents in each of the tests on brand and product recall, however, more were unaware than aware of the commercials being played.

The data collected to determine if there was a difference due to product recall and academic major (journalism/broadcasting, speech communications, or marketing) was rejected at the .05 level. With 4 degrees of freedom, the Chi Square table shows the largest critical entry to be 9.49. The Chi Square for "Product by Major" shows 2.55. Since this figure does not equal or exceed the table entry, it is not significant, and was rejected as a possible influencing factor.

The effects of rate of presentation on the gender of the listener did not make a significant difference in recall. The cell Chi Square for "Product by Sex" shows 0.1 recall for both male and female listeners. Probability of .513 does not equal or exceed the table entry and was rejected as a possible influencing factor. This finding agreed with those of Hallow (1955), Brown (1965), Foulke and Sticht (1967) as shown in the "Literature Review."

Further analyses were made by asking if there was a significant difference between brand recall, product recall, and aided recall and each of the demographic questions the students answered. With acceptance

or rejection set at the .05 level of confidence all demographic questions were rejected (Appendix G).

Some conclusions about each commercial show that the order or content of the commercials may have made a difference in individual recall.

The first commercial was Quinch Peach. Since this product is not as regional as Coke or Pepsi could be the reason why some of the students recall was not valid. Incorrect responses if stating something very specific about the commercials were entered as a valid response. Incorrect responses were entered as "no recall" and placed in the "none" categories.

The order of the Quinch Peach commercial may have affected recall, since it was the first commercial in the program. Recall response for the product was too low for any kind of comparison to be made.

At the normal rate (56:88 seconds), the Quinch Peach commercial sounded faster than the other two commercials. At a compressed rate the commercial's length was 42:25 seconds. The compression shortened the commercial by 14:63 seconds.

After the Quinch Peach commercial, there were two minutes of music ("Radioactive" from the top 20 chart) before the second commercial was played.

The Friendship Cottage Cheese commercial was a conversation between a mother and daughter with a male announcer providing the name of the product and brand. Although the mother's voice was that of a well-known personality, we don't know whether a difference occured without specific research into "well known vs. not well known voices."

Another reason why recall may not have been significant in this commercial is that the cottage cheese being advertised is not as well

known in this area as, say, Farm Fresh or Goldspot.

At the normal rate, the Friendship Cottage Cheese commercial was 59:88 seconds long. At the compressed rate it was 42:13 seconds. Compressing the commercial shortened it by 17.75 seconds.

After the Friendship commercial another song was heard from the Top 40 charts before the next commercial.

The Sedgefield Jeans commercial contained a humorous conversation between a salesman and customer. Respondents remembered the customer's voice being high because his jeans were too tight, then returning to a normal pitch when he laid down on a bench. This commercial had a higher percentage of recall, probably because of the humor. Another reason may have been that Sedgefield is one of many popular brand names in bluejeans. Higher recall of this commercial could also be due to its position in the program. Since it was heard last, the students may have had time to become more acclimated to the setting.

The Sedgefield Jeans commercial at normal speed was 59:88 seconds with the compressed speed 42:25 seconds. The amount of seconds saved was 17:63.

The total time saved by compressing the three commercials made the program almost one full minute shorter than the program containing the three normal rate commercials.

Recall of the compressed commercials may have been lower than the non-compressed commercials because the listening group sizes were larger than the groups hearing the commercials at the normal rate.

Another reason for overall low recall responses could be that the students attention was totally directed toward the task of filling out the questionnaires. Since the questionnaires required more mental

involvement than listening to the radio, and since the radio was not mentioned as part of the study, the students might have "tuned out" the program.

Referring back to the literature review, it seems that studies on time-compressed radio advertisements have been conducted where the participants were aware of the commercials, since they were asked to rate each commercial on an "effectiveness" scale (LaBarbera and MacLachlan, 1979). Studies of time-compressed advertisements where the participants were unaware of being in a test situation have concentrated on television commercials (MacLachlan and Siegel, 1980, and Ritter, Balducci, and McCollum, 1982). One comparison to be made from their findings and this study was the level of statistical significance associated with commercial content. Some commercials benefitted more than others through the use of time-compression. In this study it was the Sedgefield Jeans commercial that received the greatest amount of recall.

A final conclusion to be made from this study is that time-compressed radio commercials may work in certain situations. With the high cost of radio commercials, compression could be a possible solution for lessening the expense advertisers pay for a 30-or 60-second spot. The recommendations that follow are some areas for further research.

Recommendations

The findings in this report have led to several possible future research questions concerning compressed radio commercials.

1. Further research on time-compressed commercials when the brand and product are more well known to the listening audience.

2. Further research employing compressed vs. non-compressed

commercials when the audience consists of one to four people per group.

3. Further research on the best time of day to air a commercial at a compressed rate.

4. A study where the same commercial is heard more than once.

5. A study where the commercial is embedded into different programs (sportscast, news report, talk show).

6. Further research with different demographic groups.

7. A study where the commercial is heard at different locations (shopping mall, shoe store, grocery store).

8. A comparable study, but using well-known vs. not well-known voices.

9. A study similar to this one which alternates the order of commercials.

10. A similar study, with only one person being interviewed at a time.

11. A study where a comparison is made between different "mood" commercials.

12. A comparable study compressing a commercial to 130 percent and 125 percent normal rate.

13. A study of a radio commercial (compression vs. non-compression) of two female voices.

14. A comparable study employing two male voices.

15. A comparable study on radio commercials employing two voices with an announcer.

Since the use of time-compression is fairly recent to the broadcast advertising industry, further research in these areas may prove to be beneficial.

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APPENDIXES

APPENDIX A

LETTER TO ADVERTISING AGENCIES

July 20, 1984

Research Department
Doyle Dane Bernback International, Inc.
437 Madison Ave.
New York, New York 10022

Dear Sir or Madam,

I'd like to offer a trade: a copy of my completed thesis on time-compression, sometimes called speech compression (in radio and television application) for something you may have. Advertising age (Feb. 18, 1980) reported several leading advertising agencies are now using time-compressed commercials. Advertising Age did not, however, name specific agencies.

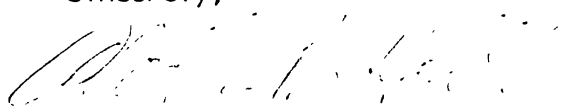
I am shooting in the dark, taking the chance you have experience with time-compression. For purposes of my thesis research I need to replicate a time-compressed radio commercial that has been tested, including the materials used in evaluating the commercial. Like most student-financed research, I have a limited budget. However, please let me know if there is a charge. Naturally, full credit and recognition would be made of your agency's participation. At the same time, please note any portion of your testing procedure or other agency data that needs to be kept confidential. Your wishes will be respected.

My study will be conducted on the Oklahoma State University campus using groups of students at test audiences (retention, recall, etc.) with your commercial as a beginning point, but with various speeds, and under various controlled situations.

Further, if there are specific tests your agency would like to suggest, those, too, could be included.

If your agency is using time-compression, I think the research I've conducted during the past year and a half would be of interest to you.

Sincerely,



Aletha B. Hollis
Graduate Student
Oklahoma State University
School of Journalism and
Broadcasting
Stillwater, OK 74078

APPENDIX B

LETTERS FROM ADVERTISING AGENCIES

ADVERTISING RESEARCH FOUNDATION
3 East 54th Street
New York, N.Y. 10022
(212) 751 5656

Dr Robert W Chestnut
Senior Vice President
Director of Research

July 26, 1974

Ms. Aletha B. Hollis
Oklahoma State University
School of Journalism and Broadcasting
Stillwater, OK 74087

Dear Aletha,

Barbara Feigin, Director of Marketing and Research for Grey Advertising, Inc., has asked me to reply to your inquiry concerning time-compression research. As of August 3rd I will be taking on the position of Technical Director for Grey and in that capacity would be very interested in how your research progresses and in receiving a copy of the thesis. Unfortunately, there is nothing available to us at Grey of a non-proprietary nature which we can release to you.

The ARF does maintain files on this subject and I have asked the head of information services to forward you copies of what he feels to be relevant. These are all materials in the public domain but still may serve to complement your own review of the literature. If you have not done so already, I would consider contacting Professor James MacLachlan at the School of Management, Rensselaer Polytechnic Institute in Troy, New York. Jim was a colleague of mine at Columbia University and, at least at that time, was very involved in this area.

Please feel free to contact me at Grey if I can be of any further help. We would appreciate being kept informed of your research and wish you the best in your current project.

Sincerely,

Robert W. Chestnut

RWC:lk
cc: Barbara Feigin, Executive V.P and
Director of Marketing and Research, Grey Advertising, Inc.

DMM

D'Arcy MacManus Masius
360 Madison Avenue
New York, NY 10017

(212) 850-7300

Venetia Hands
Senior Vice President
Director of Research

August 1, 1984

Ms. Aletha B. Hollis
Oklahoma State University
School of Journalism and Broadcasting
Stillwater, OK 74078

Dear Ms. Hollis:

Thank you for your letter of July 20. I appreciate your offer of a trade -- your thesis for a TC radio commercial.

Although I would very much like to see your thesis when it is finished, we do not have any time compressed ads to offer you.

I wish you the best of luck in your research.

Yours sincerely,

Venetia Hands

VH:sam

DOYLE DANE BERNBACH INC. ADVERTISING

RUTH ZIFF, PH.D.
EXECUTIVE VICE PRESIDENT
DIRECTOR OF RESEARCH
AND MARKETING SERVICES

July 24, 1984

Ms. Aletha B. Hollis
Graduate Student
Oklahoma State University
School of Journalism and Broadcasting
Stillwater, OK 74078

Dear Ms. Aletha:

This is in response to your letter of July 20, 1984.

Sometime ago we did a small amount of experimentation with time-compression. However, we concluded that there would not be any value in pursuing the effort.

What experimentation we did was limited to several television commercials. We did not do any work with radio, and unfortunately, the work with television would not be available for dissemination.

I am sorry that we cannot be of help.

Sincerely yours,

Dr. Ruth Ziff

RZ/mft

Ogilvy & Mather
Advertising
2 East 48th Street New York, New York 10017
Telephone 1 212 907 4100 • Telex 620554 and 12279 • Cables Ogilvy New York

Aletha B. Hollis
Graduate Student
Oklahoma State University
School of Journalism and Broadcasting
Stillwater, OK 74078

August 8, 1984

Dear Aletha:

I just checked our files on time compression. As far as I could trace it, there was some interest for it here in 1980 or so, but we never used it.

One reference I found in the file (Ad Age 7/23/78) mentioned:

- Robert Grass at DuPont and Roy Lightner at NW Ayer speech involved in compression experiment with Lucite Paint.

- Edward MacEwen at GTE and Ruth Ziff at Doyle Dane Bernbach looking at possibilities of speech compression in GTE's advertising.

Yes, we would be very interested in looking at your thesis on time-compression. Please let me know how we can get a copy.

With best regards,

A. Osiatynski

Andrzej Osiatynski

AO:sb

YOUNG & RUBICAM NEW YORK
285 MADISON AVENUE
NEW YORK, NEW YORK 10017

SID HECKER
Vice President
Associate Research Director

July 26, 1984

Aletha B. Hollis
Graduate Student
Oklahoma State University
School of Journalism and Broadcasting
Stillwater, OK 74078

Dear Ms. Hollis:

If you would call me at 212-210-4830, I'll be glad to help. Your letter is a little unclear as to the materials (TC?) you need. You might also want to try Leo Burnett in Chicago, which is probably the agency for that product.

Sincerely,

Sid Hecker

SH/klf

December 10, 1984

Ms. Aletha Hollis
131 North Husband
Stillwater, OK 74075

Dear Aletha,

I was delighted to have the opportunity to speak with you last week. Thank you for your interest in Radio Recall Research.

As promised, I am enclosing a copy of our company brochure. It not only outlines the Day-After Recall (DAR) procedure we discussed, it also provides test-retest reliablity data establishing the stability of the measurement. Inside the back flap you will find sample recall norms which should provide a bench mark for your thesis results.

I am also enclosing a sample questionnaire for a DAR study. Our claimed recall statistic is established by positive responses to questions 3,4 or 5 on the Callback Interview. Question 6 is then coded into proven or unproven recall. Coding criteria used to determine proven recall scores are as follows:

PROVEN RECALL is verbatim testimony which contains either:

A. Playback of a specific element presented in the commercial whether accompanied by incorrect testimony or not.

B. Playback of a general element presented in the commercial with nothing incorrect being mentioned.

INCORRECT RECALL is playback only of a specific or general element not presented in the commercial or testimony containing insufficient playback to categorize.

The 24 hour recall was originally established as a standard because it permitted both sufficient recall levels and discrimination among commercials. For more information on the establishment of that standard, I suggest you contact either Burke Marketing Research or Larry Mock at Procter and Gamble. Both are located in Cincinnati, Ohio.

Wishing you the best of luck with your research.

Cordially,

Diane Z. Lehder

DL:dv
Enclosures

RADIO RECALL RESEARCH, INC.
22 South Holmdel Road, P O Box 164, Holmdel, New Jersey 07733
[201] 946-9618

APPENDIX C

LIST OF TOP 20 ADVERTISING AGENCIES

TOP 20 ADVERTISING AGENCIES

Young & Rubicam
Research Department
285 Madison Ave.
New York, New York 10017

J. Walter Thompson Co.
Research Department
420 Lexington Ave.
New York, New York 10017

(BBDO) Batten, Barton, Durstine and Osborn Inc.
Research Department
383 Madison Ave.
New York, New York 10017

Ogilvy & Mather Inc.
Research Department
2 East 48th St.
New York, New York 10017

Dancer Fitzgerald Sample Inc.
Research Department
405 Lexington Ave.
New York, New York 10017

Grey Advertising Inc
Research Department
777 Third Ave.
New York, New York 10017

Foote, Cone & Belding Communications Inc.
Research Department
401 N. Michigan Ave.
Chicago, Illinois 60611

McCann-Erickson Inc.
Research Department
485 Lexington Ave.
New York, New York 10017

D'Arcy-McManus & Masius
Research Department
360 Madison Ave.
New York, New York 10017

Doyle Dane Bernback International Inc.
Research Department
437 Madison Ave.
New York, New York 10022

Compton Advertising Agency
Research Department
625 Madison Ave.
New York, New York 10022

William Esty Company Inc.
Research Department
100 E. 42nd St.
New York, New York 10017

Benton & Bowles Inc.
Research Department
909 Third Ave.
New York, New York 10012

SSC&B Inc.
Research Department
One Dag Hammarskjold Plaza
New York, New York 10017

Needham, Harper & Steers Advertising Inc.
Research Department
909 Third Ave.
New York, New York 10022

Ted Bates & Co., Inc.
Research Department
1515 Broadway
New York, New York 10036

APPENDIX D

THREE COMMERCIALS

QUINCH PEACH (normal: 56:88 compressed: 42:25)

(Two men talking)

1st man: A Peach Drink, Huh? Mmm, this is really delicious!

2nd man: New Peach Quinch Flavor Crystals. We're so sure you'll like it we'll give you your money back if you don't.

1st man: I don't like it. Where's my money?

2nd man: Naw, you'll like it--You just said that.

1st man: What is this, a trick guarantee, fine print, legal-weasel and all that?

2nd man: No, no. Anyone who tries Quinch Peach will get their money back if they don't like it.

1st man: I don't like it.

2nd man: How can you say that?

1st man: I lied.

Announcer: New Quinch Peach. If you think it's the pits, send us what you haven't used and we'll send you your money. But please--be honest.

2nd man: What do you think?

1st man: I think it's the pits.

2nd man: But I thought you said you liked it.

1st man: Allright, I like it in the abstract.

FRIENDSHIP COTTAGE CHEESE (normal: 59:88 compressed: 42:13)

(Mother and Daughter--Mother is Louise Lasser)

Daughter: Hey Ma--You know, I've really grown to like Friendship Cottage Cheese.

Mother: Seeee--See--Friendship is good anytime, and it's not just what you eat for a week after you eat a whole chocolate cake for lunch. In fact, Friendship is better than chocolate cake.

Daughter: It is? What gave you that idea?

Mother: Therapy.

Daughter: You? Were in therapy?

Mother: Mmmmm.

Daughter: Why?

Mother: Well, I...You know, I just couldn't decide whether to marry your father -- or Carlos.

Daughter: Carlos?

Mother: Oh-Co-De-Cha-Cha--What a dreamboat! But you see, Carlos was like chocolate cake. For ecstacy you had to pay--What a bum.

Daughter: And Daddy?

Mother: (seductive tone for)--Oh, Daddy. Well, Daddy is like Friendship Cottage Cheese. Always sweet, always fresh, doesn't make me break out-ha,ha, what a doll!

Announcer: Friendship Cottage Cheese. When you know what good is.

Mother: I wonder if Carlos is in the phone book.

Daughter: Ma!

SEDGEFIELD JEANS (normal: 59:88 compressed: 42:25)

(salesman and customer--2 men)

1st man: We're here again talking to people who haven't yet discovered Sedgefield jeans--the 100% cotton jeans that fit forever like they fit in the store. Hello, Sir.
2nd man: (high pitched voice) Hello.
1st man: Is everything alright?
2nd man: Everything's fine--Why?
1st man: Well, your jeans seem to fit awfully tight.
2nd man: Oh, well, I washed them a few times and I guess they shrunk a little. I didn't think anyone would notice.
1st man: Ah, sir, have you seen the new Sedgefield jeans?
2nd man: No. I don't get around much. Say, could you help me over to that bench?
1st man: Ah, certainly.
2nd man: And if you could just lay me down flat.
1st man: OK, there we go.
2nd man: Ahhhh (voice returns to normal) hhh that's better.
1st man: Uh, listen, you don't have to go through this, sir. Sedgefield jeans are the 100% cotton jeans guaranteed never to shrink from their original size no matter how much you wash 'em.
2nd man: Cotton jeans that don't shrink?
1st man: That's right.
2nd man: Sedgefield. Boy--I better write that down. There's a pen in my pocket. Do you have a crowbar?
1st man: Ah-look-just remember--Sedgefield jeans fit forever like they fit in the store.
2nd man: Oh, alright. Listen help me up will ya?
1st man: Ok--There we go. Uhh!
2nd man: (voice at high pitch) Thanks. You know, if you're lying, I'll come looking for you.
1st man: I'm sure you will.
2nd man: I'm a pretty tough guy!
1st man: (voice fades out--) I can see that.

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

Interviewer:_____
Date:_____
Program: ( ) I
Program: ( ) II
Male ( ) Female ( )

Hello, I'm _____ from Triple R Research. We're conducting surveys in this area with people 16 to 49 years of age and would like to ask you a few questions.

What is your age?

16-24 ( )
25-34 ( )
35-49 ( )

Next, I'm going to read off a list of products and as I read each one I'd like you to tell me whether or not you, yourself, have used it in the past year. Have you used (READ FIRST ITEM ON LIST) in the past year?

Used/bought in the past year			Which One Brand Would You Purchase?
Shampoo	( ) Yes	( ) No	_____
Blue Jeans	( ) Yes	( ) No	_____
Soft Drink	( ) Yes	( ) No	_____
Cottage Cheese	( ) Yes	( ) No	_____
Pain Reliever	( ) Yes	( ) No	_____

(ASK FOR EACH PRODUCT USED IN PAST YEAR) You said you have used (_____). If you were to purchase (_____) today, which one brand would you purchase?

Since my supervisor may call you tomorrow to find out if you were interviewed today, may I please have your name and phone number. Also, indicate the times we can reach you tomorrow.

SELF-ADMINISTERED #1

What is your age?

A ( ) Under 25
B ( ) 25-34
C ( ) 35-44
D ( ) 45-34
E ( ) 55+

What is your marital status?

A ( ) Married
B ( ) Single
D ( ) Divorced
E ( ) Widowed

What was the last grade of school you completed?

A ( ) Less than high school
B ( ) Some high school
C ( ) High school graduate
D ( ) Business, vocational, nursing, etc.
E ( ) Some college
F ( ) College graduate
G ( ) Post Graduate

Do you have any children in the following age groups who are living at home?

A ( ) Under 2 years of age
B ( ) 2 - 5 years of age
C ( ) 6 - 12 years of age
D ( ) 13- 18 years of age

Which best describes your family income? (Include all wage earners)

A ( ) Under $15,000
B ( ) $15,000-$19,999
C ( ) $20,000-$29,999
D ( ) $30,000-$39,999
E ( ) $40,000-$49,999
F ( ) $50,000-$59,999
G ( ) $60,000 and over

Are you employed outside of your home at the present time?

A ( ) Yes B ( ) No

If you answered yes, how many hours per week do you work?

A ( ) Under 20
B ( ) 20 - 30
C ( ) More than 30

What is your occupation?

A ( ) Professional/technical
B ( ) Upper management/administrative
C ( ) Sales/service/middle management
D ( ) Craftsman/blue collar
E ( ) Clerical/white collar
F ( ) Student
G ( ) Housewife

How would you describe your residence?

A ( ) Own a house
B ( ) Rent a house
C ( ) Rent an apartment
D ( ) Cooperative/condominium
E ( ) Other

IF YOU ARE FINISHED, WAIT JUST A MOMENT FOR THE NEXT QUESTIONNAIRE.

SELF-ADMINISTERED #2

Which of these magazines do you read regularly?

A ( ) Newsweek
B ( ) People
C ( ) Sports Illustrated
D ( ) Time
E ( ) Redbook
F ( ) Cosmopolitan
G ( ) Good Housekeeping
H ( ) Businessweek
I ( ) Playboy
J ( ) U.S. News & World Report
K ( ) T.V. Guide
L ( ) Other

Which of the following types of credit cards yo you use?

A ( ) American Express
B ( ) Diner's Club
C ( ) Carte Blanche
D ( ) Master Charge
E ( ) VISA
F ( ) Department Store
G ( ) Gasoline
H ( ) Other

Do you own a home computer? A ( ) Yes B ( ) No

Which do you consider to be your primary source of news? (Check one only)

A ( ) Radio
B ( ) Newspapers
C ( ) Television
D ( ) Magazines
E ( ) Other

How much time do you spend listening to radio in an average day?

A ( ) Less than one hour
B ( ) One to two hours
C ( ) Three or more hours

Do you own/rent a video cassette recorder? A ( ) Yes B ( ) No

Which of these television shows do you watch regularly?

A ( ) Dynasty
B ( ) Three's Company
C ( ) St. Elsewhere
D ( ) Dallas
E ( ) Magnum P.I.
F ( ) 60-Minutes
G ( ) Cheers
H ( ) Simon & Simon
I ( ) Remington Steele
J ( ) Knot's Landing
K ( ) Hill Street Blues
L ( ) Other

Which of the following interests and hobbies do you and your family enjoy? (check as many as apply)

A ( ) Tennis
B ( ) Golf
C ( ) Camping/hiking
D ( ) Hunting/fishing
E ( ) Computers
F ( ) Racquetball
G ( ) Sailing/Boating
H ( ) Snow skiing
I ( ) Bicycling
J ( ) Home workshop/do-it-yourself
K ( ) Gardening/plants
L ( ) Automotive work
M ( ) Sewing/needlework
N ( ) Stereo music equipment
O ( ) Gourmet food/cooking
P ( ) Home fashions/decorating
Q ( ) Photography
R ( ) Other

JUST A MOMENT, THE INTERVIEWER WILL GIVE YOU ONE MORE QUESTIONNAIRE.

SELF-ADMINISTERED #3

You may already have mentioned this before, but if you were to purchase today the products listed below, which one brand would youA purchase for each category?

PRODUCTS	BRAND
Soft Drink	_____
Pain Reliever	_____
Cottage Cheese	_____
Shampoo	_____
Blue Jeans	_____

Name:_____ Phone:_____

Address:_____ City/State: _____

Date:_____

Thank you for helping us. Please do not get up just yet. The interviewer would like a short word with you before you leave.

APPENDIX F

TELEPHONE CALLBACK QUESTIONNAIRE

Callback Interviewer's Name:
Phone Number:
Date:
Program I ( )
Program II ( )

RADIO TEST CALLBACK INTERVIEW

Hello, I'm _____ of Triple R Research calling (NAME OF PERSON) about the research interview he/she took part in yesterday. Is he/she at home? I'd like to speak to him/her for a moment. (IF NOT AT HOME, ASK:) When would be a good time to reach him/her today? (YOU MUST REACH RESPONDENT THE DAY AFTER EXPOSURE.)
(CALLBACK) I II III

1. Hello, so that I can be sure I'm speaking to the right person, please tell me the type of questionnaire you filled out yesterday.

_____

2. During the time you were in the case study room, do you remember hearing or listening to a radio playing or background music?
Yes ( ) No ( ) (TERMINATE).

3. What products were advertised on that radio program you heard yesterday in the case study room? (FOR EACH PRODUCT MENTIONED, ASK:) What brand was that?

PRODUCT	BRAND
_____	_____
_____	_____
_____	_____

(GO ON, EVEN IF "NONE" TO Q.3)

4. (ASK Q.4 FOR EACH PRODUCT NOT MENTIONED ABOVE) Do you remember hearing any radio advertising yesterday for...(ROTATE ORDER).

A. Soft Drink ( ) Yes - What brand?_____ ( ) No

B. Cottage Cheese ( ) Yes - What brand?_____ ( ) No

C. Blue Jeans ( ) Yes - What brand?_____ ( ) No

5. ASK FOR EACH BRAND LISTED BELOW, REGARDLESS OF WHETHER MENTIONED ABOVE. You may have already mentioned this before, but in the case study room yesterday, do you remember hearing any radio advertising for: (ROTATE ORDER).

A. Cottage Cheese ( ) Yes -(ASK Q.6) ( ) No

B. Blue Jeans ( ) Yes -(ASK Q.6) ( ) No

C. A Soft Drink ( ) Yes -(ASK Q.6) ( ) No

(ASK FOLLOWING RECALL QUESTIONS FOR ANY OF THE ABOVE THREE BRANDS MENTIONED VOLUNTARILY IN Q.3 AND Q.4 OR IN RESPONSE TO DIRECT QUESTION IN Q.5)

NOTE: REPEAT THE EXACT WORDING OF THE APPROPRIATE BRAND PROMPT FOR EACH OF THE PROBE QUESTIONS (6A - 6D).

6a. You said you remembered hearing a commercial for_____on the radio program yesterday. Please describe what you heard during that commercial. What else? Anything else?

_____

6b. What did the commercial say about _____. What else?

_____

6c. What ideas about _____ did you get from that commercial? Any others?

_____

6d. What thoughts went through your mind when you heard that commercial for _____?

_____

6e. Have you ever heard this commercial for_____before?

( )Yes ( ) No

Thank you for your help.

APPENDIX G

PROBABILITY FIGURES FROM CHI SQUARE ANALYSIS

PROBABILITY FIGURES FROM CHI SQUARE ANALYSIS

Significant at .05 level:

Probability	
.017	Product by Program
.032	Product by size of Group
.05	Brand by size of Group
.04	Brand by Program
.009	Brand by Time

Significant from .05-.10

.06	Aided recall of Jeans by Size of Group
.08	Product by Source of News
.08	Product by TV News Program Viewing
.08	Aided recall of Jeans by # of Magazines Read
.09	Aided recall of Cottage Cheese by Size of Group
.10	Aided recall of Jeans by Program
.10	Aided recall of Jeans by Time

.11-.15

.11	Brand recall by Academic Major of Respondent
.12	Aided recall of Cottage Cheese by Owning a Computer
.13	Product recall by Time

.16-.21

.16	Aided recall of Cottage Cheese by Time
.16	Aided recall of Cottage Cheese by Employed

.21-.30

.25	Aided recall of Jeans by Number of Hobbies
.26	Brand recall by Sex
.27	Brand recall by Number of Credit Cards

.31-.50

.33	Aided recall of Cottage Cheese by Income Level
.34	Aided recall of Cottage Cheese by Situation/Comedy
.36	Brand recall by Number of Magazines
.37	Aided recall of Jeans by Watching TV News Programs
.38	Aided recall of Cottage Cheese by Hours Work
.38	Brand recall by Watching TV Detective Programs
.38	Brand recall by Number of hours Listen to Radio
.39	Aided recall of Cottage Cheese by Program
.39	Aided recall of Jeans by Number of Credit Cards
.40	Aided recall of Jeans by Situation/Comedy
.41	Aided recall of Cottage Cheese by Number of Credit Cards
.41	Brand recall by Level of Income
.42	Product recall by Hours Work Per Week
.43	Aided recall of Cottage Cheese by Number of Magazines Read

Probability .31-.50 continued

.45 Aided recall of Cottage Cheese by Viewing TV Detective
.47 Aided recall of Jeans by Source of News
.49 Aided recall of Jeans by Owning a Video Recorder
.49 Aided recall of Cottage Cheese by Radio

.50 and over

.50 Aided recall of Cottage Cheese by Sex
.51 Product recall by Employed
.51 Product recall by Sex
.53 Brand recall by Owning a Computer
.53 Aided recall of Jeans by Being Employed
.54 Brand recall by Being Employed
.55 Aided recall of Jeans by Income level
.56 Aided recall of Jeans by Sex
.61 Aided recall of Jeans by Number of Credit Cards
.61 Aided recall of Cottage Cheese by TV News Programs
.63 Product recall by Academic Major of Respondent
.64 Aided recall of Cottage Cheese by Source of News
.64 Aided recall of Cottage Cheese by Academic Major
.65 Aided recall of Jeans by TV Detective Programs
.66 Product recall by Number of Magazines Read
.68 Aided recall of Cottage Cheese by Number of Hobbies
.71 Product recall by Number of Hours Listen to Radio Per Day
.74 Aided recall of Jeans by Viewing TV/Soap
.77 Product recall by Number of Hobbies
.77 Brand recall by Source of News
.77 Aided recall of Jeans by Owning a Video
.78 Brand recall by Viewing Sit/Comedy Programs
.79 Aided recall by Number of Hhours Work Per Week
.81 Product recall by Viewing TV/Soap Programs
.86 Aided recall of Cottage Cheese by Number of Hours Radio
.86 Aided recall of Cottage Cheese by Viewing TV/Soap Programs
.89 Product recall by Owning a Home Computer
.91 Product recall by Owning a Video Recorder
.94 Product recall by Viewing TV/Detective Programs
.96 Brand recall by Owning a Video Recorder
.97 Brand recall by Viewing TV/Soap Programs
.98 Brand recall by Number of Hobbies

VITA 2

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Master of Science

Thesis: THE EFFECTS OF RATE OF PRESENTATION ON RADIO COMMERCIAL RECALL

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